Energy Tax Savers, Inc.

Tax Deductions for LEED

Energy Tax Savers
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Energy Policy Act of 2005 (EPAct)

- Incentivized areas:
  - Lighting
  - HVAC
  - Building envelope

- Available for New Construction and Existing Buildings

- Available for Tenant owned lease-hold improvements

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Who's Using EPAct?

First Movers	Reasons
Retailers	• Energy is a major operating cost • Centralized facilities' management
Distribution Centers	• Major growth market • High economic return
Hotels	• Meet ASHRAE 2004 = Full EPAct • Bi-level not required in guest rooms
Parking Garages	• Large facilities drive large EPAct benefits
Industrial Facilities	• Large facilities drive large EPAct benefits • Existing lighting is being phased out by law
Office Buildings	• More states enact ASHRAE 2004 or higher building energy codes

What's it Worth?

Sample Square Footage	Lighting Minimum Deduction	Lighting Maximum Deduction	HVAC Maximum Deduction	Building Envelope Maximum Deduction	Total
50,000	$ 15,000	$ 30,000	$ 30,000	$ 30,000	$ 90,000
100,000	$ 30,000	$ 60,000	$ 60,000	$ 60,000	$ 180,000
250,000	$ 75,000	$ 150,000	$ 150,000	$ 150,000	$ 450,000
500,000	$ 150,000	$ 300,000	$ 300,000	$ 300,000	$ 900,000
750,000	$ 225,000	$ 450,000	$ 450,000	$ 450,000	$ 1,350,000
1,000,000	$ 300,000	$ 600,000	$ 600,000	$ 600,000	$ 1,800,000

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How Do You Qualify?

- Mechanics
  - Deductions based on improvements over ASHRAE 90.1 2001
  - Energy efficient improvements must be depreciable assets
    - Converts 39 year depreciation to current deduction
  - Available for installations completed 1/1/2006 through 12/31/2013
  - Deduction amounts:
    - Lesser of total cost or:
      - $1.80/sq.ft. Whole Building
      - $0.60/sq.ft. Individual Systems
        a. Lighting
        b. HVAC
        c. Building Envelope

ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers)
HVAC (Heating, Ventilation & Air Conditioning)

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8 Ways to Capture Tax Deduction

- Whole Building ($1.80/ft^2)
  - 50% Energy Cost Reduction below standard
- Permanent Rules partial deduction ($0.60/ft^2)

	Building Envelope	Lighting	HVAC
Alternative 1	$16_{2/3}$ %	$16_{2/3}$ %	$16_{2/3}$ %
Alternative 2	10%	20%	20%

- Interim Lighting Rules ($0.30/ft^2-$0.60/ft^2)
  - 25% to 40% prescribed Light Power Density (LPD) reduction below standard

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Where are the Benefits

- Lighting, Lighting, Lighting
- Lighting Controls
- Specific Types of HVAC
  - Geothermal
  - Thermal Storage
  - Central Chiller plants with small buildings(<150,000sq.ft.) in Campus
  - VAV on buildings <75,000 sq.ft.
- LEED Buildings

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Interim Lighting Rules

- Meet W/ft^2 targets
- Add'l Requirements
  - Bilevel Switching
  - Meet ASHRAE 90.1 Requirements
  - Meet IESNA minimum light levels

	2001 Standard LPD, W/ft^2	25% Improvement	40% Improvement
Office	1.3	0.975	0.78
Manufacturing	2.2	1.65	1.32
Retail	1.9	1.425	1.14
Warehouse	1.2	50% required, 0.60	

% Improvement	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	36%	37%	38%	39%	40%
Tax Deduction $/sq.ft.	0.30	0.32	0.34	0.36	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60

LPD (Light Power Density)

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Commercial Building Immediate Deduction

- Permanent Rules
  - 16 ⅔% overall cost improvement below standard generated by each system (Lighting, HVAC, Building Envelope) or
  - 10% for Envelope and 20% for Lighting & HVAC
  - Energy models confirm savings
  - Daylighting systems particularly well suited
  - HVAC may qualify with as little as a 25% improvement over standard

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Techniques for Achieving HVAC Tax Savings

1. More Efficient than Reference Equipment
   - Put in Highly efficient equipment and add
     - VFD's
     - Economizers
     - Demand Ventilation
     - Energy Recovery Ventilation
     - Etc.
2. Different Equipment than Reference Equipment
   - Chillers where Packaged Units are in the Reference Building(<150,000sq.ft.)
   - VAV where Constant Volume is in the Reference Building (<75,000 sq.ft & 3 floors or less)
   - Central Plant
   - Geothermal
3. Take advantage of Time of Day Energy Pricing
   - Thermal Storage

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Energy Simulation Modeling

- Ten approved softwares
- Important modern Energy management tool.
- Currently required for all HVAC and building envelope deductions and for whole building lighting alternative.
- In many jurisdictions, rebates are provided for all or substantial portions of modeling costs.

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Approved Software

Trane Trace 700	Version 6.1.2.0 Version 6.1.1.0 Version 6.1.0.0 Version 6.0.2.1
Energy Plus	Version 2.2.0.023 Version 2.1.0.023 Version 2.0.0.025 Version 1.4.0.025 Version 1.3.0.018
Carrier HAP	Version 4.34 Version 4.31
VisualDOE	Version 4.1 build 0002
EnergyGauge	Version 3.14 Version 3.13 Version 3.11 Version 3.1
DOE2.1E & 2.1E-JJH	Version 130 Version 119
Owens Corning Commercial Energy Calculator	Version 1.1
Green Building Studio	Version 3.1 Version 3.0
EnerSim	Version 07.11.30

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EPAct Modeling Technique

- HVAC Example
  1. Model and size your actual building and HVAC system
  2. Model a reference building designed to ASHRAE 90.1 2001 using Title 24 loads and ASHRAE 90.1 2004 Appendix G methodology. With some similar aspects to your building as defined in Appendix G.
  3. Copy the reference building and remove the reference HVAC equipment. Insert the actual equipment from step 1 into this reference building.
  4. Compare the cost of energy between step 3 and step 2. A 16.67% improvement gets tax savings.

LEED Buildings offer Tremendous EPAct Tax Saving Opportunity

- EPAct requires Modeling for HVAC, Envelope & Whole Building deductions
  - LEED-NC EA credit 1.1-1.10 requires Modeling
  - LEED Model should be analyzed by a qualified Tax Engineer (Note: LEED & EPAct Modeling are not identical)
  - High correlation between EPAct tax savings and buildings scoring >5 credits on EA 1.1-1.10

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LEED EPAct Tax Planning

- LEED model should use EPAct approved software
- LEED modeling engagement should include all EPAct modeling iterations
- Modeling process should be interactive and dynamic. Not static.
- Know the preliminary modeling results
- Slight design changes may trigger substantial tax savings

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LEED Modeling Free Riding

- A Non-EPAct qualifying LEED building is a great base for further energy reducing improvements
  - Use existing LEED model, to model in improvements
  - LEED Buildings should make energy reduction improvements by 2016 to get EPAct
  - Lighting & Lighting Controls should be easy
  - High efficiency HVAC will drive $1.80 whole building deduction

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What Does Energy Tax Savers Deliver?

- Complimentary Design Analysis
- Complimentary Tax Benefit Assessment
- Comprehensive EPAct Tax Package

- Energy Reduction Plan (ETSI Software)
- Building Energy Model (ETSI Reviewed)
- Tax Deduction Calculation (ETSI Software)
- Owners Manual, highlighting energy savings
- Design Certification (ETSI Document Creation and Review)
- Post-Implementation Inspection (ETSI Document Creation and Review)
- Audit Assistance

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LEED Building Tax Opportunities

By Charles Goulding, Jacob Goldman and Nicole DiMarino

Charles Goulding, Jacob Goldman, and Nicole DeMarino explain the accelerating pace of energy efficient building certification and the tax savings incentives associated with this important environmental effort.

LEED building certification is quickly becoming the Marquee standard for best of breed buildings. LEED buildings are typically entitled to substantial tax benefits, and tax professionals should recognize LEED building proposals as tax planning opportunities. LEED is administered by the U.S. Green Buildings Council and stands for Leadership in Energy and Environmental Design. The LEED ratings system establishes 69 rating points and four categories of accomplishment, with the highest being LEED Platinum, followed by LEED Gold, LEED Silver and LEED certified.

Figure 1

Certification Level	Rating Points
LEED Certified	26-32
LEED Silver	33-38
LEED Gold	39-51
LEED Platinum	52-69

On June 8, 2007, Yudelson Associates, an organization that monitors LEED data, announced that there are now 6,300 buildings in LEED registration and that to date 820 completed building projects have become LEED certified. A November 13, 2007, Wall Street Journal article noted that in a recent seven month period 2.2 billion square feet of commercial construction space was registered for LEED, which is much less time than the seven years it took to register the first 1 billion in square footage.[1] Achieving the coveted LEED certification level has impacted an ever expanding category of buildings. In addition to LEED industrial buildings, LEED office buildings, and LEED retail stores, we now have LEED schools, LEED bank branches, and our first LEED car dealership, which is a Toyota dealership in McKinney, Texas. [2]

The tax opportunities with LEED buildings relate to the large number of LEED ratings points involving energy cost reduction. Out of the 69 total LEED rating points, over 20 points relate to energy criteria, with 10 points specifically designated for energy optimization. The Energy Policy Act of 2005 (EPAct) provides for up to a $1.80 per square foot immediate tax deduction for achieving specified energy cost reductions above ASHRAE 2001 building energy code performance standards. The $1.80 per square foot tax deduction is the maximum tax deduction, but within the $1.80 deduction amount there are three building sub system tax deductions up to 60 cents per square foot for lighting, HVAC (Heating, Ventilation and Air Conditioning) and the Building Envelope (the building's exterior shell). ASHRAE stands for the American Society of Heating Refrigeration and Air Conditioning engineers. LEED certification requires compliance with the more rigorous ASHRAE 2004 building code standards. This means that achieving LEED status should put a building owner well on its way to simultaneously obtaining EPAct tax benefits. EPAct tax deductions are currently available for projects completed between January 1, 2006, and December 31, 2008. There are bills currently before Congress to extend EPAct through December 31, 2013.

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Nicole DiMarino is an analyst with Energy Tax Savers, Inc.

Figure 2

Potential EPAct Tax Deductions Available for LEED Certified Buildings Currently in Registration:					
Total	Lighting		HVAC	Building Envelope	Total
Square Footage	Minimum Deduction	Maximum Deduction	Maximum Deduction	Maximum Deduction	
2,200,000,000	$ 660,000,000	$1,320,000,000	$1,320,000,000	$1,320,000,000	$ 3,960,000,000

The 2.2 billion of commercial LEED projects have the potential to obtain almost 4 billion in EPAct tax deductions as presented in Figure 2.

LEED and EPAct Modeling Requirements

Further facilitating EPAct tax deductions for LEED buildings is the mutual requirement that both LEED building compliance and EPAct tax compliance be documented by building energy computer simulation modeling (modeling). The modeling process requires that the energy performance characteristics of the Lighting, HVAC mechanical systems, and Building Envelope be inputted into specialized computer programs called models. Normally, highly skilled engineers perform the modeling task. It is particularly important to use a highly skilled engineer when modeling building energy solutions, since the engineer will often need to create a documented math algorithem to properly reflect the equipment's energy performance. To obtain EPAct tax benefits only an IRS approved modeling software can be used. To date IRS has approved eight modeling softwares in the following versions:

Additional modeling softwares are currently seeking IRS approval.

The EPAct model technique is somewhat different than LEED modeling so the engineer/modeler should not commence a project where tax savings are desired without speaking to a tax expert familiar with the nuances of EPAct tax modeling.

> A November 13, 2007, Wall Street Journal article noted that in a recent seven month period 2.2 billion square feet of commercial construction space was registered for LEED, which is much less time than the seven years it took to register the first 1 billion in square footage.

Figure 3

IRS Approved EPAct Building Energy Modeling Software	
TRACE 700	Version 6.0.2.1
TRACE 700	Version 6.1.0.0
TRACE 700	Version 6.1.1.0
EnergyPlus	Version 1.3.0.018
EnergyPlus	Version 1.4.0.025
EnergyPlus	Version 2.0.0.025
Hourly Analysis Program	Version 4.31
Hourly Analysis Program	Version 4.34
VisualDOE	Version 4.1 build 0002
EnergyGauge Summit	Version 3.1 build 2
EnergyGauge Summit	Version 3.11
DOE-2.1E	Version 119
Owens Corning Commercial Energy Calculator (OC-CEC)	Version 1.1
Green Building Studio	Version 3.0

LEED/EPAct Strategy

Lighting Strategies

When combining LEED and EPAct tax planning strategies, a rigorous focus on energy efficient lighting including energy efficient lighting fixtures, lighting controls, and day lighting concepts is one of the best ways to maximize LEED rating points and EPAct tax deductions. The energy savings and tax deductions with day lighting systems are directly proportional to window to wall ratios and sky light to roof ratios. The more windows and skylights, the more daylight access and greater potential for energy savings and EPAct tax deductions.

Building Envelope/HVAC Strategies

To maximize building energy efficiency and tax deduction, the key is to start with a very energy efficient building envelope. An efficient building envelope will allow the building owner to right size the HVAC system, which for all practical purposes means downsize to the correct building size. Without a highly efficient building envelope and modeling data, historically the HVAC industry has often over sized the systems to avoid complaints. Because HVAC is the biggest building energy user, appropriately sizing the HVAC system can save tremendous energy costs.

New Building Codes Requiring LEED

Increasingly we are seeing two types of local area LEED building code standards being enacted. Some jurisdictions are requiring that all government buildings meet prescribed LEED standards. For example:

Arizona: Requires all state funded buildings to achieve LEED Silver certification.

California: Requires the design, construction, and operation of all new and renovated state owned facilities to be LEED Silver.

Michigan: All state funded new construction and major renovation projects over $1,000,000 must be LEED certified.

New Mexico: All public buildings over 15,000 square feet must be LEED Silver.

Note that with government buildings, the architect or engineer effectuating the energy efficient design is entitled to the EPAct tax deduction benefits. [3]

Other jurisdictions are going further and requiring that all new buildings meet specified LEED levels. For example:

Babylon, New York: Requires LEED certification for any new construction of commercial buildings, office buildings, industrial buildings, multiple residences, or senior citizen multiple residences over 4,000 square feet.

Calabasas, California: All nonresidential, city and privately owned buildings between 500 square feet and 5,000 square feet must meet the LEED Certified level. Buildings over 5,000 square feet must meet the LEED Silver level.

With the expansion of these building code requirements, virtually every building owner in the country with a national new building program is closely examining how to potentially achieve LEED status.

LEED and Energy Related Grants and Rebates

Many jurisdictions are beginning to offer LEED specific grants and rebates. For example, for new LEED buildings, LIPA, the electric utility in Long Island, New York, is offering major incentives up to:

1. $500,000 in LEED project grants
2. $100,000 in LEED building commissioning costs
3. $50,000 in LEED/EPAct modeling costs
4. $25,000 per LEED energy related rating point.

Most traditional utility rebates support the LEED energy optimization rating points, related to energy reduction particularly for lighting and lighting controls and multiple energy efficient HVAC projects.

LEED Tax Planning

Designing a facility to achieve LEED status takes a lot of time and effort and requires participation by numerous parties, including the designers and intended occupants of a facility. As soon as the tax professional learns that a LEED building is being contemplated, they should begin getting involved in the LEED tax planning aspects of the project. The energy efficiency breakpoints for tax deductions at the whole building and building subsystems should be examined, along with the utility rebate breakpoints to help the LEED designer understand all the economic benefits available to support the LEED initiative.

Conclusion

The widespread acceptance of the LEED rating point system by America's leading property owners, platforms substantial tax opportunities. The severity of the energy crisis is apparent to all Americans. Tax professionals who understand that LEED status embodies energy cost reduction can play an important part in helping to address one of our nation's biggest challenges.

Endnotes

1 Dana Mattioli, How Going Green Draws Talent, Cuts Costs, The Wall Street J., (November 13, 2007):B10.

2 Jessie Bove, Taking the LEED: Pat Lobb Toyota of McKinney, Texas, Becomes the First Auto Dealership to Win LEED Certification, Display and Design Ideas Magazine (March 1, 2007) *www.ddimagazine.com/displayanddesignideas/search/article_display.jsp?vnu_content_id=1003552525,* accessed November 21, 2007.

3 Code Sec. 179D (d)(4).

BUILDING OPERATING management

HVAC

Very Efficient HVAC Systems May Qualify for Tax Deductions

By Charles Goulding, Jacob Goldman and Siddharth Sheth

The Energy Policy Act of 2005 (EPAct) provides potentially significant tax deductions for energy efficient HVAC systems installed in new and existing buildings. But there is a caveat: To qualify for the deduction, the HVAC system must reduce energy costs by at least 16.67 percent compared to HVAC systems designed to meet ASHRAE 90.1-2001.

Under current law, the project must be placed in service between Jan. 1, 2006 and Dec. 31, 2008 to qualify for EPAct tax benefits. There are efforts in Congress to increase the tax deductions and extend EPAct through the 2012 tax year and through 2014 for projects certified as of 2012.

For tax purposes the term “HVAC” includes all building HVAC equipment but excludes refrigeration. Qualifying HVAC projects typically fall into four categories.

1. **Comprehensive energy-efficient HVAC systems.** Merely changing one of the major components of an HVAC system — such as a package unit, a chiller or heat pumps — is generally insufficient to qualify for EPAct tax deductions. Normally only comprehensive energy-efficient HVAC system installations qualify — those that include very high efficiency core equipment plus variable frequency drives and additional enhancements, such as demand ventilation and energy recovery ventilation. The installation of an energy-efficient chiller in a building smaller than 150,000 square feet does provide an opportunity for an EPAct deduction since the ASHRAE reference building will include a less efficient HVAC package unit.
2. **Geothermal.** Numerous geothermal installations qualify for HVAC EPAct tax deductions because geothermal is not part of the ASHRAE 2001 reference building methodology.
3. **Thermal storage.** Thermal storage systems present excellent opportunities for EPAct tax deductions resulting from time-of-day pricing. Thermal storage systems make ice or cool water at night, which is used to cool a building during daylight hours. Night time electrical cost can be as much as 40 percent less than day rates which creates the type of substantial energy cost savings necessary to achieve EPAct tax deductions.
4. **Central plant environments.** Central plant environments present some potentially large EPAct deduction opportunities particularly if the central plant is very energy efficient and serves buildings smaller than 150,000 square feet.

The interdependence of the HVAC and lighting systems may offer additional opportunities for achieving HVAC deductions under EPAct. The consensus is that there is a 1-watt reduction in power consumption for an HVAC unit for every 3-watt reduction in lighting power. Thus, installing energy-efficient lighting may help a facility qualify for a deduction for the HVAC system. HVAC operating costs can further be reduced by reducing the operating hours of the lighting fixtures.

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To obtain a tax deduction for an HVAC system, the energy cost savings must be confirmed or supported by energy modeling software accepted by the Internal Revenue Service (IRS). As of now, five software models have gained IRS approval: Trane Trace 700, Energy Plus, Carrier HAP, Visual DOE and EnergyGauge. Other modeling software will probably be sent to the IRS for approval as time goes on.

Energy modeling can be quite expensive because it requires a lot of expertise and time for data entry. Ordinarily, tax savings potential alone does not justify the expenses of a model. Rather, modeling is generally used for non-tax reasons such as analyzing building equipment choices or for incentive/rebate requirements or LEED certification.

Those reasons can help justify the cost of a model needed to obtain an HVAC tax deduction. It is important to note that EPAct requires a different modeling approach than the one used for LEED. Facility executives should make sure that the engineers doing the modeling understand EPAct modeling requirements.

There are other ways to reduce the cost of energy modeling. For example, rebates may be available to reimburse some or all modeling costs. These rebates must usually be lined up before the model is completed; it is generally not possible to obtain a modeling rebate after the fact.

For large HVAC projects, the equipment manufacturer may absorb some or all of the modeling costs pursuant to the sale process.

More EPAct Projects

Despite the significant tax benefits available for energy-efficient HVAC systems, most of the projects that have qualified for tax deductions under EPAct have involved lighting. But that is beginning to change as facility executives learn about the tax incentives that are available.

In New Jersey, for example, the famed Monmouth Park horse racing facility is planning a comprehensive energy-efficiency initiative involving lighting, HVAC and the building envelope. The proposed HVAC investment includes air-to-air energy recovery ventilation. The facility exceeds 500,000 square feet. Preliminary calculations show that the EPAct tax deduction should fall between $300,000 and $600,000.

As the number of LEED projects increases, the number of HVAC, building envelope and whole building projects that qualify for EPAct will increase. Presuming Congress extends the window for EPAct projects, and that HVAC systems get more energy efficient, the number of standalone HVAC projects that qualify for EPAct should also increase. BOM

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